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1975 The Decker Mine  
proposals

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THE DECKER MINE PROPOSALS:  
A Demographic Analysis

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prepared by  
JOHN S. FITZPATRICK, Ph.D.  
Energy Planning Division  
Montana Department of Natural Resources

for  
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The Decker Mine proposals: a demographic



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## INTRODUCTION: Social and Economic Impacts

The social and economic analyses are directed at a three-county study area - Rosebud and Big Horn Counties in Montana and Sheridan County, Wyoming. Choice of this study area was dictated by a desire to block out an area of sufficient size so that it would encompass local and dispersed mine impacts.

Statistical data are usually collected by political or administrative boundaries. County level data is the most consistent common denominator. But social and economic patterns do not respect county lines. It is quite possible for the social impact of the proposed mines to be felt beyond the immediate Sheridan - Decker locale. On the other hand, demographic impacts may not carry so far. To outline a consistent maximum boundary for impact analysis, the three-county area was selected.

Obviously, not all areas within the region can be expected to experience the same quantity or quality of impact from the proposed mines. Those locations more directly or immediately impacted will receive the greater amount of emphasis. Areas far removed from and/or tangentially affected by the mine proposals will receive correspondingly less attention.

Three major portions makeup the discussion of social and economic impacts. A demographic analysis reviews population impacts, especially the prognosis for population growth. An economic section focuses upon the mine's influence on employment, income, taxes, and government expenditures. The social impact portion of the report treats the effect of the mines on the local social structure and social service delivery systems.



## SUMMARY



CHAPTER II  
DESCRIPTION OF THE EXISTING ENVIRONMENT





## Description of the Existing Environment

### C. Population

Since 1960 the level of population within the impact area has remained relatively static. The period 1960-1970 was marked by a small population decline. From 1970-1974 the Census Bureau reported a reversal in the downward trend of the 1960's. Rosebud County reported a 27.7% increase in five years; Sheridan grew an estimated 8.1%; and, Big Horn was up 4.4%.

In all three cases, a stimulus to population growth appears to have been coal development. The three-county region now contains six operating strip mines. Four of the mines were opened after 1968. Two coal-fired electric generating plants are under construction at Colstrip in Rosebud County.

Table \_\_ illustrates the population trends in the impact area. The populations of the respective county seats, census divisions adjacent to the mine sites, and states are also reported. During the decade of the 1960's, the impact area failed to keep pace with growth state-wide. Since 1970, state-wide growth has been surpassed by regional increases. All three counties show low population density.

Sheridan County has a bi-modal population pyramid with large numbers of children and elderly. The middle-aged groups are small by comparison. The median age in the county is significantly higher than the state median. Among Wyoming counties, Sheridan has the second highest median age. Across the border, in Montana, the opposite is the case. Both Rosebud and Big Horn contain very young populations. Population pyramids are triangular in shape. Age

TABLE —  
POPULATION CHANGE<sup>1/</sup>

	1960	1970	1974 <sup>2/</sup>	Change 1960-1970 (percent)	Change 1970-1974 (percent)	1970 Population Density (persons per mile)
G HORN (county)	10,007	10,057	10,500	+ 0.5%	+ 4.4%	2.0
ardin (city)	2,789	2,733	NA	- 2.0%	NA	NA
usby-Decker (census division)	1,012	1,035	NA	+ 2.4%	NA	NA
SEBUD (county)	6,187	6,032	7,700 <sup>3/</sup>	- 2.5%	+27.7%	1.2
orsyth (city)	2,032	1,873	NA	- 7.8%	NA	NA
eland-Lane Deer-Birney (census division)	2,075	2,535	NA	+26.9%	NA	NA
ERIDAN (county)	18,989	17,852	19,300	- 6.0%	+ 8.1%	7.1
eridan (city)	11,651	10,856	NA	- 6.8%	NA	NA
eridan West (census division)	2,970	2,570	NA	-13.5%	NA	NA
NTANA (state)	674,767	694,409	735,000	+ 2.9%	+ 5.8%	4.8
OMING (state)	330,066	332,416	359,000	+ 0.7%	+ 8.0%	3.4

Sources: U.S., Bureau of the Census, U.S. Census of Population: 1970 Number of Inhabitants, Final Report PC(1) - A 28 Montana, Government Printing Office, Washington, D.C.; 1970.

U.S., Bureau of the Census, Current Population Reports, Series P-26 Montana and Wyoming. Government Printing Office, Washington, D.C.; 1974

U.S., Bureau of the Census, U.S. Census of Population: 1970 Characteristics of the Population vol. 1, part 52 Wyoming. Government Printing Office, Washington, D.C.; 1970.

Population figures for 1974 are preliminary, mid-year estimates developed by the U.S. Bureau of the Census and reported in Current Population Reports Series p-26.

The 1974 estimate for Rosebud county is significantly lower than estimates developed by state, private, and other governmental agencies. The Montana Department of Natural Resources and Conservation forecast the 1975 county population at 9,357 (Montana Department of Natural Resources, 1974; 764). The Rosebud County Planning Board reported a "best guess" estimate of 9,100 (Rice, April 25, 1978).

cohorts with the highest representation are those for children. This is not unusual for areas with large minority populations. The median age for both counties is significantly lower than the state median (see Technical Appendix - Population for a more detailed description of population characteristics).

All three counties contain approximately equal numbers of males and females. Racially, Sheridan County is unlike Big Horn and Rosebud. The latter counties contain large populations of American Indians. Sheridan County has a minute Indian population.

Big Horn and Rosebud Counties exceed the Montana average for persons per household. Again, a high number of persons per household is not unusual for counties with a sizeable minority population. Sheridan is below the Wyoming average. All three counties have a similar percentage of married individuals but differ in the estimated number of children per married couple.

The dissimilarity between Sheridan and the Montana counties is also evident in birth and death rates. Sheridan is unique with its death rate approximating the birth rate. Natural increase as a growth mechanism is negligible. Big Horn and Rosebud counties illustrate high rates of birth and natural increase.

Rates of natural increase are strongly tied to age and racial characteristics. As a general rule, younger populations produce more children than do the old. Indian fertility is markedly higher than comparable groups of whites.<sup>1</sup> This is especially true among rural and reservation Indians such as those of Big Horn and Rosebud Counties.

The high rates of natural increase within these counties are closely related to the influence of youth and the presence of a large Indian minority. Static or declining population levels have been maintained by steady streams of out-migrants. Likewise, Sheridan's low rate of natural increase is partially attributable to its age and racial composition. Middle-aged individuals, those who bear children and rear families, are not abundant.

Rates of natural increase have a number of implications. They specify the internal growth potential of an area, outline the potential reserves of manpower, and serve as a barometer of social and economic change. In attempting to estimate the demographic change the effect of natural increase must also be considered. The scope of population migration to or from the impact area will be tempered by local, natural growth. Population changes triggered by the Decker proposals are additive components to the existing patterns of change.

NOTES

1. U.S. Department of Agriculture, Economic Research Service.  
American Indians in Transition by Helen W. Johnson, AER NO.  
238. Washington, D.C.; April 1975.



CHAPTER III  
ENVIRONMENTAL IMPACT OF THE PROPOSALS





## Environmental Impact of the Proposals

### Population - Developmental Assumptions

The assumptions used to develop population projections are listed below. A fuller explanation of these assumptions is located in the Demographic Supplement attached to Technical Appendix - Population.

1. Population change is the product of birth, death, and migration.
2. Economic development (i.e., the proposed Decker mines) is considered a major impetus for population change.
3. Estimates of population change attributable to the Decker mine proposals consider both the direct and indirect employment effects of the mines.
4. Mine work and railroad employment is considered the basic component of the local economy. All other jobs are considered derived.

TABLE 1/

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980 - 2000</u> <sup>4/</sup>
North Extension					
Preparatory <sup>2/</sup>	50	0	0	0	0
Operations	70	70	70	70	70
Railroad	5	5	5	5	5
Derived <sup>3/</sup>	140	100	90	90	80
East Decker					
Construction	165	215	65	0	0
Operations	0	0	200	250	270
Railroad	0	0	20	25	27
Derived <sup>3/</sup>	100	130	320	320	340

<sup>1/</sup> Source: Decker Coal Company, Written Communication, July 30, 1975. Estimates of railroad and derived employment were calculated for the economic analysis of the Sheridan-Decker area. A description of the economic methodology is located in appendixes. Estimates of derived employment are considered preliminary at this time. Additional information may necessitate their revision.

- 2/ Preparatory workers are construction workers differentiated from the latter on the basis of skill. Preparatory workers are principally heavy equipment operators involved in building ramps, diversion dams, removing top soil, etc.
- 3/ Estimates of derived employment are only for full-time jobs. Part-time employment is attributed to the existing population. It is not considered a variable in estimating population.
- 4/ Labor market adjustments after 1980 will affect the level of derived employment. For simplicity's sake, these adjustments are ignored.

5. All basic jobs (i.e. mine and railroad) are filled by in-migrating workers.
6. Derived jobs are filled by in-migrating workers and females. Women employees participate in the labor force as derived workers. Forty percent (40%) of the married workers are female. Estimation procedures consider households and single individuals as input variables. Married women are a component of households. Calculation of the "derived population" requires subtraction of the number of married female workers from total full-time derivative employment.
7. The migrant population attracted to the impact area will illustrate slightly different population characteristics when compared with the existing population.

The salient differences appear to be or include:

- a. In-migrants are assumed to be between the ages of 18 and 65 years (i.e., working age).
- b. The median age of the migrant population is assumed to be at or near the national median age of 28.1 years.
- c. Given the relative age of the in-migrants it is further assumed that a higher proportion will be married.
- d. All in-migrants are assumed to be Caucasian.
- e. Racial and age differences between migrants and residents implies a larger sized family for in-migrants.
8. Fifty percent (50%) of the in-migrating construction workers will be married with 1.5 children per married couple. Eighty percent (80%) of the in-migrating operational mine workers, railroad, and derivative employees will be married with 1.5 children per married couple.
9. Each married couple will have 1.125 school-aged children.

10. The in-migrating population will be distributed in a manner similar to the existing work force and population associated with the Decker Coal Company. That is, 90% of the in-migrants will settle in Sheridan County. The majority of these people will settle in the city of Sheridan. The remaining population (10%) is attributed to Big Horn County.
11. No other coal or industrial development will occur within the impact area boundaries (especially in the vicinity of Sheridan).
12. With the exception of in-migration associated with the proposed Decker mine expansion, net migration is assumed to be zero in Big Horn and Sheridan Counties. Rosebud County will not experience population change attributable to the proposed Decker projects. For all counties, natural increase is assumed constant at 1970-1974 levels.

## Population Change

The assumptions outlined in the preceding section serve as the basis for estimating population change in the impact area. Table \_ represents calculations of future population by mine. The demographic impact of each mine is further subdivided by employment sector. A population peak is indicated in 1980 with an anticipated increase of 1,902 persons. The proposed East Decker operation will be responsible for approximately 80% of the Decker related population growth. The North Extension contributes the remainder.

Population growth related to mine expansion will fluctuate somewhat from year to year as construction phases are terminated and the mines are brought on stream. Adjustments in the local labor market will gradually change the secondary or derived impact of the mines. Initially, the employment multiplier is expected to be slightly higher than in the 1980's (see Economic analysis). This phenomena has the effect of raising population estimates to higher levels in the early years of the projected time sequence. It also accounts for the ever diminishing population effect of the mines. Estimates for the North Extension mines on Table \_ are illustrative.

Table \_ presents population estimates on a county basis. Sheridan County has been attributed 90% of the mine's population impact, Big Horn County is projected to receive 10%. Rosebud County is not expected to experience a measureable amount of population change because of the Decker proposals. Population growth in Sheridan County is estimated to range from approximately 1,000 persons in

TABLE  
MINE RELATED POPULATION

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980 - 2000<sup>2/</sup></u>
North Extension (total)	601	413	394	394	371
Preparatory <sup>1/</sup>	113	0	0	0	0
Operations	210	210	210	210	210
Railroad	15	15	15	15	15
Derived	263	183	169	169	146
East Decker (total)	561	728	1,411	1,428	1,531
Construction	373	485	148	0	0
Operations	0	0	600	750	810
Railroad	0	0	60	75	82
Derived	183	243	603	603	639
Total, East and North	1,162	1,141	1,805	1,822	1,902
Construction	486	485	143	0	0
Operations	210	210	810	960	1,020
Railroad	15	15	75	90	97
Derived	451	431	772	772	785

<sup>1/</sup> Population figures in the rows designated by the words preparatory or construction reflect population levels related to mine construction jobs. Population levels associated with mine operations, railroad transport of coal, and derived employment are also designated.

<sup>2/</sup> By 1980 population levels attributable to the Decker projects are considered stable. No Decker related population change is forecast for the remainder of the century.

TABLE  
COUNTY POPULATION

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981 - 2000</u> <sup>6/</sup>
Sheridan County Total <sup>1/</sup>	19,619	20,684	20,684	21,301	21,335	21,426	NA
Base Population <sup>2/</sup>	19,600	19,619	19,638	19,657	19,676	19,695	NA
Natural Increase <sup>3/</sup>	19	19	19	19	19	19	NA
North Extension <sup>4/</sup>	NA	541	372	355	355	334	334
East Decker	NA	505	655	1,270	1,285	1,378	1,378
Big Horn County Total	10,631	10,880	11,013	11,215	11,355	11,503	NA
Base Population	10,500	10,631	10,764	10,899	11,035	11,173	NA
Natural Increase	131	133	135	136	138	140	NA
North Extension	NA	60	41	39	39	37	37
East Decker	NA	56	73	141	143	153	153
Rosebud County Total <sup>5/</sup>	9,357	NA	NA	8,137	NA	7,862	NA

<sup>1/</sup> Total population computed by adding together population components for base population, natural increase, and mine expansion. Ninety (90) percent of the mine population is attributed to Sheridan county and 10% to Big Horn.

<sup>2/</sup> Base population for 1975 derived by projecting the 1970-74 rate of change one additional year. Thereafter, base population increases at a rate corresponding to natural increase.

<sup>3/</sup> Natural increase is the excess of births over deaths. The Sheridan county rate of natural increase is assumed constant at 0.1% per year. Big Horn county has an assumed rate of natural increase at 1.25% per year.

<sup>4/</sup> The population estimate reported for the North Extension and East Decker mines is total population. It includes population associated with mine construction and operation, railroad transport, and derivative employment.

- 5/ The Rosebud county total is drawn from estimates prepared for the Montana Department of Natural Resources. The figures include population growth associated with the construction and operation of Colstrip units #1 and #2, expansion of the Western Energy Mine, and natural increase. See Montana Department of Natural and Conservation, Energy Planning Division, Draft Environmental Impact Statement on Colstrip Electric Generating Units 3 and 4, vol. 3a Power Plant, (Helena, Montana; 1974), pp. 771-778.
- 6/ Natural increase, base, and total county population is not presented after 1980. Estimates of natural increase become increasingly speculative by that date. Mine related population is considered stable for the years 1980 - 2000.



1976 and 1977 to 1,700 people by 1980. The Decker impact in Big Horn County is from 100 to 190 persons. Natural increase is a relatively insignificant component of population change in Sheridan County. Not so, however, in Big Horn County where one year's quota of growth from natural increase is equivalent to almost three-fourths of the mine related population in the peak year of 1980.

The school-age population is presented in Table\_\_\_. Again, Sheridan County is attributed 90% of the increase. The number of school-aged children will range from 282 to 504 in Sheridan County, from 31 to 56 in Big Horn.

#### Qualifications and Reservations

The population estimates of the preceding section are an attempt to foretell the future. They are not absolute. The output of any modeling technique is contingent upon the nature of the inputs. The assumptions and input criteria of this model have been specified. Future population estimates have been derived accordingly. Nevertheless, some qualifications are necessary. First, the assumption of 1.5 children per married couple is drawn from research conducted outside the Sheridan area and "preliminary" site-specific information. This assumption may be in error. Adjustments will be made as dictated by updated information. Second, derived employment is difficult to calculate. The adjustment mechanisms of a local economy are difficult to specify. It is even more difficult to accurately translate derived employment into population change. Third, in the absence of other major industrial developments, it is doubtful that Big Horn County will maintain its recent trend of growth. Net out-migration will substantially enlarge. Population will not continue to grow at a rate near that for natural increase.

TABLE  
SCHOOL CHILDREN<sup>1/</sup>

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981 - 2000<sup>3/</sup></u>
Total School Children	318	313	524	537	560	560
Sheridan County Total <sup>2/</sup>	286	282	471	483	504	504
North Extension	154	110	194	164	98	98
East Decker	132	172	367	379	406	406
Big Horn County Total	32	31	53	54	56	56
North Extension	17	12	12	12	11	11
East Decker	15	19	41	42	45	45

<sup>1/</sup> Assumes 1.125 school age (i.e., 6-18 years old) children per married couple.

<sup>2/</sup> Ninety (90) percent of the school children allocated to Sheridan county, 10% percent allocated to Big Horn county.

<sup>3/</sup> By 1980 the number of school aged children is considered stable and projected at a constant level until the turn of the century.

Fourth, mine hiring presents the "appearance" of hiring local residents. On-site research suggests a different interpretation. There is some in-migration to the Sheridan area in anticipation of mine employment. These people accept various types of employment while waiting for a job opening at a mine. When hired they are categorized as local residents. In fact, they are very recent residents. Being a local requires a period of social integration. This feature is treated more fully in sections dealing with social impact. From a demographic perspective, in-migration in anticipation of mine employment can have the effect of raising population above the projected levels.



CHAPTER IV  
ADDITIONAL MITIGATING OR COMPENSATING MEASURES



## Mitigating and Compensating Measures

### Population

Population change in itself is not a phenomenon which necessitates either mitigation or encouragement. The demands and requirements of the population specify the type and degree of mitigating measures. Some locations are better able to absorb increasing population levels. Other areas lose little substance with declining numbers of people. A discussion of mitigating measures as they relate to population change is more properly confined to other sections dealing with social and economic analysis.





FULL REPORT



## CHAPTER II

### DESCRIPTION OF THE EXISTING ENVIRONMENT



## Description of the Existing Environment

### C. Population

Since 1960 the level of population within the impact area has remained relatively static. The period 1960-1970 was marked by a small population decline. From 1970-1974 the Census Bureau reported a reversal in the downward trend of the 1960's. Rosebud county reported a 27.7% increase in five years; Sheridan grew an estimated 8.1%; and, Big Horn was up 4.4%.

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Table \_ and Figures \_\_, \_\_, and \_\_ show the age composition of the three-county area. Sheridan county has a bi-modal population pyramid with large numbers of children and elderly. The middle-aged groups are small by comparison. The median age in the county is significantly higher than the state median. Among Wyoming counties, Sheridan has the second highest median age. Across the border, in Montana, the opposite is the case. Both Rosebud and Big Horn contain very young populations. Population pyramids are triangular in shape.

TABLE —  
POPULATION CHANGE<sup>1/</sup>

	1960	1970	1974 <sup>2/</sup>	Change 1960-1970 (percent)	Change 1970-1974 (percent)	1970 Population Density (persons per mile)
Big Horn (county)	10,007	10,057	10,500	+ 0.5%	+ 4.4%	2.0
Cardin (city)	2,789	2,733	NA	- 2.0%	NA	NA
DeSmet-Decker (census division)	1,012	1,036	NA	+ 2.4%	NA	NA
Rosebud (county)	6,187	6,032	7,700 <sup>3/</sup>	- 2.5%	+27.7%	1.2
Theriot (city)	2,032	1,873	NA	- 7.8%	NA	NA
Theriot-Lane Deer-Birney (census division)	2,076	2,535	NA	+25.9%	NA	NA
Theriot (county)	18,989	17,852	19,300	- 6.0%	+ 8.1%	7.1
Theriot (city)	11,651	10,856	NA	- 6.8%	NA	NA
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MTANA (state)	674,767	694,409	735,000	+ 2.9%	+ 5.8%	4.8
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TABLE \_  
POPULATION CHARACTERISTICS - AGE<sup>1/</sup>

	Less Than 18 Years (percent)	18-64 Years (percent)	65 Years or More (percent)	Median Age (years)	Median Age <sup>2/</sup> (rank among counties)
Big Horn (county)	42.1%	51.0%	6.9%	23.4	55th of 56
Rosebud (county)	39.6%	50.2%	10.2%	26.2	43rd of 56
Sheridan (county)	30.7%	53.4%	15.9%	36.8	2nd of 23
Montana (state)	36.5%	53.6%	9.9%	27.1	NA
Wyoming (state)	36.1%	54.8%	9.1%	27.2	NA

<sup>1/</sup> Sources: U.S., Bureau of the Census, U.S. Census of Population: 1970 General Population Characteristics, Final Report PC (1) - B28 Montana. Government Printing Office, Washington, D.C.; 1970.

U.S., Bureau of the Census, U.S. Census of Population: 1970 Characteristics of the Population vol. 1, part 52 Wyoming. Government Printing Office, Washington, D.C.; 1970.

<sup>2/</sup> Counties are ranked from high to low median age. The county with the highest median age receives the rank of one (1), etc. Rank ordering is based on intra-state comparisons. Montana has 56 counties; Wyoming has 23 counties.

Age Coho.  
(Years)

MALE

FEMALE

≥85

101

146

80-84

191

209

75-79

316

321

70-74

396

411

65-69

341

432

60-64

459

502

55-59

561

574

50-54

603

595

45-49

596

574

40-44

540

535

35-39

420

453

30-34

393

419

25-29

385

434

20-24

453

447

15-19

893

842

10-14

922

874

5-9

761

685

0-4

582

513

POPULATION  
by  
AGE and SEX

Sheridan County, Wyoming  
FIGURE \_

1000 500 0 500 1000  
Population (Numbers of Persons)



Age Cohort  
(Years)

MALE

FEMALE

≥ 85

80-84

75-79

70-74

65-69

60-64

55-59

50-54

45-49

40-44

35-39

30-34

25-29

20-24

15-19

10-14

5-9

0-4

37 → ← 28

46 → ← 51

53 → ← 57

90 91

128 112

208 154

236 240

259 253

239 270

255 251

231 253

282 295

334 322

305 392

491 494

582 611

640 633

544 560

POPULATION  
by  
AGE and SEX

Big Horn County, Montana  
FIGURE \_\_

1000 500 0 500 1000

Population (Numbers of Persons)

(Years)  
≥85

60-84

75-79

70-74

65-69

60-64

55-59

50-54

45-49

40-44

35-39

30-34

25-29

20-24

15-19

10-14

5-9

0-4

51 → ← 20

43 → ← 39

72 77

51 → 76

107 98

112 93

143 138

169 151

177 156

175 160

162 149

161 150

192 192

165 210

276 271

372 333

339 352

293 311

# POPULATION by AGE and SEX

Rosebud County, Montana  
FIGURE —

1000 500 0 500 1000

Population (Numbers of Persons)

Age cohorts with the highest representation are those for children. This is not unusual for areas with large minority populations. The median age for both counties is significantly lower than the state median.

Table \_ contains information regarding the sex and racial composition of the impact area. All three counties contain approximately equal numbers of males and females. Racially, Sheridan county is unlike Big Horn and Rosebud. The latter counties contain large populations of American Indians. Sheridan county has a minute Indian population.

Big Horn and Rosebud counties exceed the Montana average for persons per household. Again, a high number of persons per household is not unusual for counties with a sizeable minority population. Sheridan is below the Wyoming average (see Table \_). All three counties have a similar percentage of married individuals but differ in the estimated number of children per married couple.

The dissimilarity between Sheridan and the Montana counties is also evident in birth and death rates (see Table \_). Sheridan is unique with its death rate approximating the birth rate. Natural increase as a growth mechanism is negligible. Big Horn and Rosebud counties illustrate high rates of birth and natural increase.

Rates of natural increase are strongly tied to age and racial characteristics. As a general rule, younger populations produce more children than do the old. Indian fertility is markedly higher than comparable groups of whites.<sup>1</sup> This is especially true among rural and reservation Indians such as those of Big Horn and Rosebud Counties.

TABLE —  
POPULATION CHARACTERISTICS - SEX AND RACE<sup>1/</sup>

	1970 Sex Ratio <sup>2/</sup>	1970 White Population	Percent White	1970 Indian Population	Percent Indian	1970 Total Population
Big Horn (county)	98	6,018	59.8%	3,917	38.9%	10,057
Bozeman (county)	102	4,203	69.7%	1,820	30.2%	6,032
Cheyenne (county)	99	17,662	98.9%	100 <sup>3/</sup>	0.6% <sup>3/</sup>	17,852
Montana (state)	100	663,043	95.5%	27,130	3.9%	694,409
Wyoming (state)	101	323,024	97.2%	4,980	1.5%	332,416

<sup>1/</sup> Sources: U.S., Bureau of the Census, U.S. Census of Population: 1970 General Population Characteristics, Final Report PC (1) - 828 Montana. Government Printing Office, Washington, D.C.; 1970.

U.S., Bureau of the Census, U.S. Census of Population; 1970 Characteristics of the Population vol. 1, part 52 Wyoming. Government Printing Office, Washington, D.C.; 1970.

<sup>2/</sup> The sex ratio is the number of males per every 100 females

<sup>3/</sup> Estimated

TABLE \_  
POPULATION CHARACTERISTICS - MARITAL STATUS AND HOUSEHOLDS<sup>1/</sup>

	1970 Number Married (14 years and older)	Percent Married	1970 Number of Households	1970 Persons Per Household	1970 <sup>2/</sup> County Rank (persons per household)	1970 Number of Childr per Married Couple <sup>3</sup>
Big Horn (county)	4,266	63.8%	2,664	3.74	1st of 56	2.07
Brosebud (county)	2,637	63.4%	1,817	3.24	13th of 56	1.88
Cheridan (county)	8,712	62.5%	6,189	2.78	22nd of 23	1.34
Montana (state)	318,460	63.4%	217,304	3.10	NA	NA
Wyoming (state)	159,504	66.2%	104,600	3.09	NA	NA

<sup>1/</sup> Sources: U.S., Bureau of the Census, U.S. Census of Population: 1970 General Population Characteristics, Final Report PC(1) - B28 Montana. Government Printing Office, Washington, D.C.; 1970.

U.S., Bureau of the Census, U.S. Census of Population: 1970 Characteristics of the Population vol. 1, part 52 Wyoming. Government Printing Office, Washington, D.C.; 1970.

<sup>2/</sup> Counties are ranked from high to low. The county with the highest number of persons per household receives the rank of one (1), etc. Rank ordering is based on intra-state comparisons. Montana has 56 counties; Wyoming has 23 counties.

<sup>3/</sup> Estimated.

TABLE —  
POPULATION CHARACTERISTICS - BIRTHS AND DEATHS<sup>1/</sup>

	1970 <sup>2/</sup> Birth Rate	1974 Birth Rate	Number of Births 1970 - 1974	1970 Death Rate	1974 Death Rate	Number of Deaths 1970 - 1974	1970 - 1974 <sup>3/</sup> Natural Increase (Number) (Per-
Big Horn (county)	24.8	22.0	1,143	9.6	10.2	500	643 6.4
Beaumont (county)	27.5	24.9	839	13.4	10.4	376	463 7.7
Blaine (county)	13.4	13.7	1,276	15.2	12.8	1,259	17 0.1
Bozeman (state)	18.2	16.7	60,078	9.5	8.9	33,774	26,304 3.8
Butte (state)	19.7	17.5	31,075	8.8	8.6	15,146	15,929 4.8

Montana, Department of Health and Environmental Sciences, Bureau of Records and Statistics, Montana Vital Statistics. Helena, Montana, 1970-1973. (unpublished records and statistics, 1974).

Wyoming, Department of Health and Social Services, Vital Records Services. (unpublished records and statistics, 1970-1974).

Rates are calculated as the number of births or deaths per 1,000 population.

Natural Increase is the excess of births over deaths. Percent calculations are derived from the 1970 base population.

The high rates of natural increase within these counties are closely related to the influence of youth and the presence of a large Indian minority. Static or declining population levels have been maintained by steady streams of out-migrants. Likewise, Sheridan's low rate of natural increase is partially attributable to its age and racial composition. Middle-aged individuals, those who bear children and rear families, are not abundant.

Rates of natural increase have a number of implications. They specify the internal growth potential of an area, outline the potential reserves of manpower, and serve as a barometer of social and economic change. In attempting to estimate the demographic change the effect of natural increase must also be considered. The scope of population migration to or from the impact area will be tempered by local, natural growth. Population changes triggered by the Decker proposals are additive components to the existing patterns of change.

NOTES

1. U.S. Department of Agriculture, Economic Research Service,  
American Indians in Transition by Helen W. Johnson, AER NO.  
238. Washington, D.C.; April 1975.



CHAPTER III  
ENVIRONMENTAL IMPACT OF THE PROPOSALS



## Environmental Impact of the Proposals

### Population - Developmental Assumptions

The assumptions used to develop population projections are listed below. A fuller explanation of these assumptions is located in the Demographic Supplement attached to Technical Appendix - Population.

1. Population change is the product of birth, death, and migration.
2. Economic development (i.e., the proposed Decker mines) is considered a major impetus for population change.
3. Estimates of population change attributable to the Decker mine proposals consider both the direct and indirect employment effects of the mines.
4. Mine work and railroad employment is considered the basic component of the local economy. All other jobs are considered derived.

TABLE 1/

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980 - 2000</u> <sup>4/</sup>
North Extension					
Preparatory <sup>2/</sup>	50	0	0	0	0
Operations	70	70	70	70	70
Railroad	5	5	5	5	5
Derived <sup>3/</sup>	140	100	90	90	80
East Decker					
Construction	165	215	65	0	0
Operations	0	0	200	250	270
Railroad	0	0	20	25	27
Derived <sup>3/</sup>	100	130	320	320	340

<sup>1/</sup> Source: Decker Coal Company, Written Communication, July 30, 1975. Estimates of railroad and derived employment were calculated for the economic analysis of the Sheridan-Decker area. A description of the economic methodology is located in appendixes. Estimates of derived employment are considered preliminary at this time. Additional information may necessitate their revision.

- 2/ Preparatory workers are construction workers differentiated from the latter on the basis of skill. Preparatory workers are principally heavy equipment operators involved in building ramps, diversion dams, removing top soil, etc.
- 3/ Estimates of derived employment are only for full-time jobs. Part-time employment is attributed to the existing population. It is not considered a variable in estimating population.
- 4/ Labor market adjustments after 1980 will affect the level of derived employment. For simplicity's sake, these adjustments are ignored.

5. All basic jobs (i.e. mine and railroad) are filled by in-migrating workers.
6. Derived jobs are filled by in-migrating workers and females. Women employees participate in the labor force as derived workers. Forty percent (40%) of the married workers are female. Estimation procedures consider households and single individuals as input variables. Married women are a component of households. Calculation of the "derived population" requires subtraction of the number of married female workers from total full-time derivative employment.
7. The migrant population attracted to the impact area will illustrate slightly different population characteristics when compared with the existing population.

The salient differences appear to be or include:

- a. In-migrants are assumed to be between the ages of 18 and 65 years (i.e., working age).
- b. The median age of the migrant population is assumed to be at or near the national median age of 28.1 years.
- c. Given the relative age of the in-migrants it is further assumed that a higher proportion will be married.
- d. All in-migrants are assumed to be Caucasian.
- e. Racial and age differences between migrants and residents implies a larger sized family for in-migrants.
8. Fifty percent (50%) of the in-migrating construction workers will be married with 1.5 children per married couple. Eighty percent (80%) of the in-migrating operational mine workers, railroad, and derivative employees will be married with 1.5 children per married couple.
9. Each married couple will have 1.125 school-aged children.

10. The in-migrating population will be distributed in a manner similar to the existing work force and population associated with the Decker Coal Company. That is, 90% of the in-migrants will settle in Sheridan County. The majority of these people will settle in the city of Sheridan. The remaining population (10%) is attributed to Big Horn County.
11. No other coal or industrial development will occur within the impact area boundaries (especially in the vicinity of Sheridan).
12. With the exception of in-migration associated with the proposed Decker mine expansion, net migration is assumed to be zero in Big Horn and Sheridan Counties. Rosebud County will not experience population change attributable to the proposed Decker projects. For all counties, natural increase is assumed constant at 1970-1974 levels.

## Population Change

The assumptions outlined in the preceeding section serve as the basis for estimating population change in the impact area. Table \_ presents calculations of future population by mine. The demographic impact of each mine is further subdivided by employment sector. A population peak is indicated in 1980 with an anticipated increase of 1,902 persons. The proposed East Decker operation will be responsible for approximately 80% of the Decker related population growth. The North Extension contributes the remainder.

Population growth related to mine expansion will fluctuate somewhat from year to year as construction phases are terminated and the mines are brought on stream. Adjustments in the local labor market will gradually change the secondary or derived impact of the mines. Initially, the employment multiplier is expected to be slightly higher than in the 1980's (see Economic Analysis). This phenomena has the effect of raising population estimates to higher levels in the early years of the projected time sequence. It also accounts for the ever diminishing population effect of the mines. Estimates for the North Extension mines on Table \_ are illustrative.

Table \_ presents population estimates on a county basis. Sheridan County has been attributed 90% of the mine's population impact, Big Horn County is projected to receive 10%. Rosebud County is not expected to experience a measureable amount of population change because of the Decker proposals. Population growth in Sheridan County is estimated to range from approximately 1,000 persons in

TABLE  
MINE RELATED POPULATION

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980 - 2000<sup>2/</sup></u>
North Extension (total)	601	413	394	394	371
Preparatory <sup>1/</sup>	113	0	0	0	0
Operations	210	210	210	210	210
Railroad	15	15	15	15	15
Derived	263	188	169	169	146
East Decker (total)	561	728	1,411	1,428	1,531
Construction	373	485	148	0	0
Operations	0	0	600	750	810
Railroad	0	0	60	75	82
Derived	188	243	603	603	639
Total, East and North	1,162	1,141	1,805	1,822	1,902
Construction	486	485	148	0	0
Operations	210	210	810	960	1,020
Railroad	15	15	75	90	97
Derived	451	431	772	772	785

<sup>1/</sup> Population figures in the rows designated by the words preparatory or construction reflect population levels related to mine construction jobs. Population levels associated with mine operations, railroad transport of coal, and derived employment are also designated.

<sup>2/</sup> By 1980 population levels attributable to the Decker projects are considered stable. No Decker related population change is forecast for the remainder of the century.



TABLE  
COUNTY POPULATION

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981 - 2000</u> <sup>6/</sup>
Sheridan County Total <sup>1/</sup>	19,619	20,684	20,684	21,301	21,335	21,426	NA
Base Population <sup>2/</sup>	19,600	19,619	19,638	19,657	19,676	19,695	NA
Natural Increase <sup>3/</sup>	19	19	19	19	19	19	NA
North Extension <sup>4/</sup>	NA	541	372	355	355	334	334
East Decker	NA	505	655	1,270	1,285	1,378	1,378
Big Horn County Total	10,631	10,880	11,013	11,215	11,355	11,503	NA
Base Population	10,500	10,631	10,764	10,899	11,035	11,173	NA
Natural Increase	131	133	135	136	138	140	NA
North Extension	NA	60	41	39	39	37	37
East Decker	NA	56	73	141	143	153	153
Rosebud County Total <sup>5/</sup>	9,357	NA	NA	8,137	NA	7,862	NA

<sup>1/</sup> Total population computed by adding together population components for base population, natural increase, and mine expansion. Ninety (90) percent of the mine population is attributed to Sheridan county and 10% to Big Horn.

<sup>2/</sup> Base population for 1975 derived by projecting the 1970-74 rate of change one additional year. Thereafter, base population increases at a rate corresponding to natural increase.

<sup>3/</sup> Natural increase is the excess of births over deaths. The Sheridan county rate of natural increase is assumed constant at 0.1% per year. Big Horn county has an assumed rate of natural increase at 1.25% per year.

<sup>4/</sup> The population estimate reported for the North Extension and East Decker mines is total population. It includes population associated with mine construction and operation, railroad transport, and derivative employment.

- 5/ The Rosebud county total is drawn from estimates prepared for the Montana Department of Natural Resources. The figures include population growth associated with the construction and operation of Colstrip units #1 and #2, expansion of the Western Energy Mine, and natural increase. See Montana Department of Natural and Conservation, Energy Planning Division, Draft Environmental Impact Statement on Colstrip Electric Generating Units 3 and 4, vol. 3b Power Plant, (Helena, Montana; 1974), pp. 771-778.
- 6/ Natural increase, base, and total county population is not presented after 1980. Estimates of natural increase become increasingly speculative by that date. Mine related population is considered stable for the years 1980 - 2000.

1976 and 1977 to 1,700 people by 1980. The Decker impact in Big Horn County is from 100 to 190 persons. Natural increase is a relatively insignificant component of population change in Sheridan County. Not so, however, in Big Horn County where one year's quota of growth from natural increase is equivalent to almost three-fourths of the mine related population in the peak year of 1980.

The school age population is presented in Table \_\_. Again, Sheridan County is attributed 90% of the increase. The number of school aged children will range from 282 to 504 in Sheridan County, from 31 to 56 in Big Horn.

#### Qualifications and Reservations

The population estimates of the preceeding section are an attempt to foretell the future. They are not absolute. The output of any modeling technique is contingent upon the nature of the inputs. The assumptions and input criteria of this model have been specified. Future population estimates have been derived accordingly. Nevertheless, some qualifications are necessary. First, the assumption of 1.5 children per married couple is drawn from research conducted outside the Sheridan area and "preliminary" site specific information. This assumption may be in error. Adjustments will be made as dictated by updated information. Second, derived employment is difficult to calculate. The adjustment mechanisms of a local economy are difficult to specify. It is even more difficult to accurately translate derived employment into population change. Third, in the absence of other major industrial developments, it is doubtful that Big Horn County will maintain its recent trend of growth. Net out-migration will be substantially enlarged. Population will not continue to grow at a rate near that for natural increase.

TABLE  
SCHOOL CHILDREN<sup>1/</sup>

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981 - 2000<sup>3/</sup></u>
Total School Children	318	313	524	537	560	560
Sheridan County Total <sup>2/</sup>	286	282	471	483	504	504
North Extension	154	110	104	104	98	98
East Decker	132	172	367	379	406	406
Big Horn County Total	32	31	53	54	56	56
North Extension	17	12	12	12	11	11
East Decker	15	19	41	42	45	45

<sup>1/</sup> Assumes 1.125 school age (i.e., 6-18 years old) children per married couple.

<sup>2/</sup> Ninety (90) percent of the school children allocated to Sheridan county, 10% percent allocated to Big Horn county.

<sup>3/</sup> By 1980 the number of school aged children is considered stable and projected at a constant level until the turn of the century.

Fourth, mine hiring presents the "appearance" of hiring local residents. On-site research suggests a different interpretation. There is some in-migration to the Sheridan area in anticipation of mine employment. These people accept various types of employment while waiting for a job opening at a mine. When hired they are categorized as local residents. In fact, they are very recent residents. Being a local requires a period of social integration. This feature is treated more fully in sections dealing with social impact. From a demographic perspective, in-migration in anticipation of mine employment can have the effect of raising population above the projected levels.



CHAPTER IV

ADDITIONAL MITIGATING OR COMPENSATING MEASURES





## Mitigating and Compensating Measures

### Population

Population change in itself is not a phenomenon which necessitates either mitigation or encouragement. The demands and requirements of the population specify the type and degree of mitigating measures. Some locations are better able to absorb increasing population levels. Other areas lose little substance with declining numbers of people. A discussion of mitigating measures as they relate to population change is more properly best confined to other sections dealing with social and economic analysis.



CHAPTER V

ADVERSE IMPACTS THAT CANNOT BE AVOIDED  
IF THE PROPOSALS ARE IMPLEMENTED



Adverse Impacts that Cannot be Avoided if the Proposals  
are Implimented

Population

Not applicable



CHAPTER VI

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND  
THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY





Short Term Use and Long Term Productivity

Population

Not applicable



CHAPTER VII

IRREVERSIBLE AND IRRETRIEVABLE  
COMMITMENTS OF RESOURCES



Irreversible and Irretrievable Commitments of Resources  
Population

Not applicable.



SUPPLEMENT





## Demographic Supplement

### Population - Developmental Assumptions

1. Population change is the product of birth, death, and migration.

The components of population change are influenced by a multitude of variables ranging from disease, famine, and war to religious attitudes, educational background, and political oppression. The nature of a local economy, be it one of development and growth, stagnation, or decline, is one variable which will effect population change.

2. Economic development (i.e., the proposed Decker mines) is considered a major impetus for population change.

Economic development is described here as the construction and operation of the proposed East and North Extension mines. The tie between economic development and population change is made through employment. The mines provide jobs which attract workers and their families to the area (or hold individuals who might otherwise be out-migrants).

3. Estimates of population change attributable to the Decker mine proposals consider both the direct and indirect employment effects of the mines.

The direct impact of the mines is seen in the creation of jobs in mine construction and operation. Coal transport by rail also adds employment. Mine and rail jobs are considered basic employment.<sup>1</sup> The indirect influence of the mines is seen in the stimulation of the local economy. Additional basic employment creates an increasing demand for locally produced goods and services. Employment in this sphere is termed secondary or derived. Estimates of future population extend from projected employment increases in mine operations and

construction, railroads, and the derived sector.<sup>2</sup>

4. Mine work and railroad employment is considered the basic component of the local economy. All other jobs are considered derived.

The estimated number of mine construction, mine operation, railroad, and derived employees is included in the table below.

Table \_ 1/

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980 - 2000<sup>4/</sup></u>
North Extension					
Preparatory <sup>2/</sup>	50	0	0	0	0
Operations	70	70	70	70	70
Railroad	5	5	5	5	5
Derived <sup>3/</sup>	140	100	90	90	80
East Decker					
Construction	165	215	65	0	0
Operations	0	0	200	250	270
Railroad	0	0	20	25	27
Derived <sup>3/</sup>	100	130	320	320	340

1/ Source: Decker Coal Company, Written Communication, July 30, 1975. Estimates of railroad and derived employment were calculated for the economic analysis of the Sheridan-Decker area. A description of the economic methodology is located in appendixes. Estimates of derived employment are considered preliminary at this time. Additional information may necessitate their revision.

2/ Preparatory workers are construction workers differentiated from the latter on the basis of skill. Preparatory workers are principally heavy equipment operators involved in building ramps, diversion dams, removing top soil, etc.

3/ Estimates of derived employment are only for full time jobs. Part-time employment is attributed to the existing population. It is not considered a variable in estimating population.

4/ Labor market adjustments after 1980 will effect the level of derived employment. For simplicity's sake, these adjustments are ignored.

5. All basic jobs (i.e. mine and railroad) are filled by in-migrating workers.

By assuming in-migration to all basic jobs, it is tacitly assumed that the impact area lacks sufficient reserves of skilled industrial manpower. The impact area has a small population. The area's existing economic base is strongly oriented toward agriculture, commerce, services, and government. The area lacks a large industrial base. It is not unreasonable to assume that workers with "industrial" skills would be in short supply. In this respect, the impact area would not differ from other rural locations beset with industrialization.<sup>3</sup> This assumption is made with the full recognition that some mine workers could and probably would be existing residents of the impact area. It is also recognized that a job training program could increase the supply of native labor available for mine work.

6. Derived jobs are filled by in-migrating workers and females. Women employees participate in the labor force as derived workers. Forty percent (40%) of the married workers are female. Estimation procedures consider households and single individuals as input variables. Married women are a component of households. Calculation of the "derived population" requires subtraction of the number of married, female workers from total full-time derivative employment.

This assumption is made to avoid the methodological flaw of assuming that all new derivative workers are in-migrants. It is not the case. Female participation in the labor force is principally in the "derivative sector". These workers are drawn, in part, from the indigenous population. The assumption that 40% of the married derivative work force is female is based upon estimates and interpolations of national and state information regarding female labor force participation rates.<sup>4</sup>

7. The migrant population attracted to the impact area will illustrate slightly different population characteristics when compared with the existing population.

The salient differences appear to be or include:

- a. In-migrants are assumed to be between the ages of 18 and 65 years (i.e., working age).
- b. The median age of the migrant population is assumed to be at or near the national median age of 28.1 years. This age suggests a population somewhat older than Big Horn and Rosebud county populations but significantly younger than Sheridan county.
- c. Given the relative age of the in-migrants, it is further assumed that a higher proportion will be married.
- d. All in-migrants are assumed to be Caucasian. In this respect, the in-migrants are viewed as being racially similar to the existing population of Sheridan county but dissimilar with that of Big Horn and Rosebud counties.
- e. Racial and age differences between migrants and residents implies differing family size. Young, white migrants will have larger families than the existing old, white residents of Sheridan county. The migrant families will not be as large as those found in Big Horn and Rosebud counties where the population is young and contains a large segment of Indians.

8. Fifty percent (50%) of the in-migrating construction workers will be married with 1.5 children per married couple. Eighty percent (80%) of the in-migrating operational mine workers, railroad, and derivative employees will be married with 1.5 children per married couple.

Estimates of 1.5 children per married couple and proportions of 50% and 80% married were utilized in demographic analyses conducted at Colstrip, Montana.<sup>5</sup> These assumptions do not appear unreasonable when marriage, family size, and age data are considered for each county. The Decker Coal Company, in recent survey of its employees, has indicated an average of 1.2 - 1.5 children per family.<sup>6</sup>

9. Each married couple will have 1.125 school aged children.

This assumption is relatively standard in marking 25% of all children as being under the age of 6 years.

10. The in-migrating population will be distributed in a manner similar to the existing work force and population associated with the Decker Coal Company. That is, 90% of the in-migrants will settle in Sheridan County. The majority of these people will settle in the city of Sheridan. The remaining population (10%) is attributed to Big Horn County.

This assumption largely concurs with the output of the VTN gravity model.<sup>7</sup> Given the existing transportation network and availability of services, Sheridan (city) is the most likely center of settlement. Predicting the settlement patterns of new residents is difficult since new subdivisions or settlements may spring up outside the immediate Sheridan area. If this were to be the case, it is possible that areas beyond Sheridan would experience greater levels of population change.

11. No other coal or industrial development will occur within the impact area boundaries (especially in the vicinity of Sheridan).

This assumption may appear somewhat naive given the presence of large stripable deposits of coal in Montana and Wyoming. Texaco, Shell, and others<sup>8</sup> are actively examining development prospects in the Sheridan area. However, in the absence of a definitive statement of intent (e.g., an application for a surface mine permit), no provision is made to include employment or population data from tentative or speculative projects.

12. With the exception of in-migration associated with the proposed Decker mine expansion, net migration is assumed to be zero in Big Horn and Sheridan Counties. Rosebud County will not experience population change attributable to the proposed Decker projects. For all counties, natural increase is assumed constant at 1970-1974 levels.

These assumptions are included to simplify analysis. Thus, future population estimates include provisions for natural increase and change associated with the Decker Mine proposals.

## NOTES

1. Basic employment is described as employment in the production of goods or services for sale to consumers or producers outside the base or local economy. Basic activities are considered as bringing new money into the local economy. Secondary or derived employment is described as employment in the production of goods and services for local consumption. (e.g., barbers, grocery clerks, cooks, dentists, etc.) In theory income generated by the basic sector stimulates or sustains the derived sector of a local economy. The general relationship between basic and derived activities is described by a multiplier.
2. Caution must be used in attempting to measure population change using estimates of new derivative employment. The relationship between basic and derived employment is complex. The creation of X number of new basic jobs does not axiomatically lead to Y number of new derived jobs. This point is frequently overlooked, and the basic/derived employment relationship (i.e., the employment multiplier) is often misused. Even when derived employment can be predicted with some degree of certainty, that same certainty cannot be translated into calculations of population change. A time lag can often be anticipated between a change in basic employment and a concomitant change in the derived sphere. A local labor market may contain some slack (i.e., excess capacity) with existing services able to meet the needs of changing population levels. Derived employment is diverse in nature. The concept commonly includes occupations such as physicians, attorneys, teachers, chambermaids, bank tellers, gas station attendants, grocery store clerks, etc. Some of these positions can be expected to be filled by in-migrants. Others will be filled by the existing population (e.g., working wives, part-time student help, people holding second jobs, etc.) Derived employment does not lead to automatic changes in population levels.
3. Somers, Gerald. "Labor Recruitment in a Depressed Rural Area". Monthly Labor Review, October 1958; Gray, Irwin. "Employment Effects of a New Industry in a Rural Area", Monthly Labor Review, June 1969; Peterson, John M. and Wright, Earl. Dynamics of Small Area Labor Supply: A Case Study, Industrial Research and Extension Center, Little Rock; 1967.
4. U.S., Department of Labor, Manpower Administration. Manpower Report to the President 1975. Government Printing Office; Washington, D.C., 1975.
5. Jobs, Patrick C. Population Projections and Estimates of Rosebud and Contiguous Counties Associated with Coal Development and the Potential Construction of Colstrip Generating Plant #3 and #4. Bozeman, Montana; August 1974.

6. Mr. Bob Clark, Environmental Coordinator, Decker Coal Company, telephone conversation August 25, 1975. The Decker estimate of family size is based upon an incomplete tabulation of survey questionnaires. It is considered a preliminary estimate subject to revision.
7. VTN Colorado, Draft Environmental Impact Assessment for the Proposed East Decker Coal Mine. 1975.
8. Montana Energy Advisory Council, Coal Development Information Packet. Helena, Montana; December 1974.